PATENT
Attorney Docket No. YOR920000185US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	
Douglas Lee SCHALES et al.	Examiner: Lashonda T. JACOBS
Serial No: 09/548,141	Art Unit: 2157
Filed: April 13, 2000	
For: NETWORK DATA PACKET CLASSIFICATION AND DEMULTIPEXING	

APPEAL BRIEF

Board of Patent Appeals and Interferences
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The applicant submits this brief pursuant to 37 C.F.R. §41.37(a)(1) in furtherance of the Notice of Appeal filed July 18, 2006, setting a two-month shortened statutory period of brief filing expiring September 18, 2006.

Please charge Deposit Account 50-0510 the $500 fee for filing this Appeal Brief. No other fee is believed due with this Appeal Brief, however, should another fee be required please charge Deposit Account 50-0510.

Real Party In Interest

The real party in interest is International Business Machines Corporation, as evidenced by the assignment set forth at Reel 011028, Frame 0183.

Related Appeals And Interferences

None.

Status of Claims

Claims 7-11, 17-21, 25 and 26 are cancelled. Claims 1-6, 12-16, 22-35 and 38 are pending in the present application, with claims 1, 28 and 38 being independent claims.

The rejection of claims 1-6, 12-16, 22-35 and 38 is appealed. The table below summarizes the status of the claims.

Claim(s)	Status	Appealed
1	Amended	Yes
2-6	Original	Yes
7-11	Canceled	No
12-16	Original	Yes
17-21	Canceled	No
22	Original	Yes
23	Amended	Yes
24-35	Original	Yes
36-37	Canceled	No
38	Original	Yes
39	Canceled	No

Status of Amendments

No amendments to the claims were made after the Final Office Action dated April 18, 2006 ("FOA").

Summary of the Claimed Subject Matter

The present Application relates to classification and demultiplexing of network communication packets processed in a network protocol stack. App., pg. 1, ln. 3-5.

As recited in claim 1, an embodiment of the invention includes receiving a data packet at a root node of a classification tree. App., pg. 8, ln. 7-12 and Fig. 5, item 502. The data packet is successively passed to each child of a first tree level until a first child of the first tree level of the classification tree indicates a satisfaction of a node-criteria packet matching function of the first child. App., pg. 8, ln. 14-24 and Fig. 6. The step of passing and forming is repeated for a next tree level until no first child of the next level at a succeeding next level indicates satisfaction of the node-criteria packet matching function of the first child of said next level. App., pg. 9, ln. 14-18 and Fig. 6.

Another embodiment of the invention, recited in claim 28, is an apparatus to classify a data packet. App., pg. 14, ln. 4-6 and Fig. 11. The apparatus includes a network interface device to receive the data packet from the physical network and pass the data packet to the root node of a classification tree, and the reverse, to receive the data packet from the root node and send the data packet to the physical network. App., pg. 14, ln. 6-9 and Fig. 11, item 1101. The apparatus also includes a packet module to successively pass the packet from child node to child node at a next tree level until a first child node of the next tree level of the classification tree which indicates a satisfaction of a node-criteria of the first child node, and to form the data packet into a matched packet until no first child node of at a succeeding next level indicates satisfaction of the first node-criteria of the first child node of the succeeding next level. App., pg. 14, ln. 9-15 and Fig. 6, item 1103.

A further embodiment, as recited by claim 38, is an apparatus for classifying a data packet. App., pg. 14, ln. 21-22. The apparatus includes means for receiving the data packet at a root node of a classification tree. App., pg. 8, ln. 7-12 and Fig. 5, item 502. For example, a network driver may receive a packet from the physical network, which it classifies based on

frame type in the MAC header and passes it to the root node of the classification tree. App., pg. 8, ln. 10-12. The apparatus further includes means for successively passing the data packet to each child of a first tree level until a first child node of the first tree level of the classification tree indicates a satisfaction of a node-criteria of said first child node, and the first child node forming said data packet into a matched packet. App., pg. 24-27 and Fig. 6. The apparatus also includes means for repeating the steps of passing and forming for a next tree level until no first child node of the next tree level at a succeeding next level indicates satisfaction of the node-criteria of the first child node of said succeeding next level. App., pg. 14, ln. 28-31 and Fig. 6, item 1103. The apparatus, for example, may be in the form of a floppy or hard disk, flash memory or external magnetic media. App., pg. 14, ln. 31-33.

Grounds for Rejection to be Reviewed on Appeal

I. Claims 1-6, 12-16, 22-35 and 38 were rejected under 35 USC §102(e) as anticipated by U.S. Patent No. 6,412,000 to Riddle et al ("Riddle").

Argument

I. CLAIMS 1-6, 12-16, 22-35 and 38 ARE NOT ANTICIPATED BY RIDDLE

The Examiner argues that claims 1-6, 12-16, 22-35 and 38 are anticipated by Riddle. The Appellants respectfully disagree with the Examiner's assertions, as discussed in detail below.

To anticipate a claim under 35 USC §102, a reference must teach every element of the claim. MPEP 2131. Under an anticipation rejection, the identical invention must be shown in as complete detail as is contained in the claim. MPEP 2131 citing Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The Riddle Reference

Riddle appears to describe a management system for network bandwidth based on information ascertainable from multiple layers of an OSI network model. Riddle, col. 1, ln. 54-57. A classification tree may be utilized to compare a current traffic flow to attributes of a given traffic class. Riddle, col. 9, ln. 34-37. Leafs in the classification tree can contain policies for managing the current traffic flow. Riddle, col. 9, ln. 38-41.

Claim 1

Claim 1 of the present invention recites, in part, "successively passing the data packet to each child of a first tree level until a first child of the first tree level of the classification tree indicates a satisfaction of a node-criteria packet matching function of said first child." In rejecting claim 1, the Final Office Action alleges that these claim limitations can be found at column 9, lines 28-62. FOA, pg. 2.

Riddle, at the cited passage, states,

> A classification tree is a data structure representing the hierarchical aspect of traffic class relationships. Each node of the classification tree represents a class, and has a traffic specification, i.e., a set of attributes or characteristics describing the traffic associated with it. Leaf nodes of the classification tree may contain policies. According to a particular embodiment, the classification process checks at each level if the flow being classified matches the attributes of a given traffic class. If it does, processing continues down to the links associated with that node in the tree. If it does not, the class at the level that matches determines the policy for the flow being classified. If no policy specific match is found, the flow is assigned the default policy.
>
> In a preferred embodiment, the classification tree is an N-ary tree with its nodes ordered by specificity. For example, in classifying a particular flow in a classification tree ordered first by organizational departments, the attributes of the flow are compared with the traffic specification in each successive department node and if no match is found, then processing proceeds to the next subsequent department node. If no match is found, then the final compare is a default "match all" category. If, however, a match is found,

> then classification moves to the children of this department node. The child nodes may be ordered by an orthogonal paradigm such as, for example, "service type." Matching proceeds according to the order of specificity in the child nodes. Processing proceeds in this manner, traversing downward and from left to right in FIGS. 2A and 2B, which describe a classification tree, searching the plurality of orthogonal paradigms. Key to implementing this a hierarchy is that the nodes are arranged in decreasing order of specificity. This permits search to find the most specific class for the traffic before more general. Riddle, col. 9, ln. 28-62.

As evident from the quoted passage, Riddle teaches a classification process that checks if the flow being classified matches attributes stored in nodes of a tree. By contrast, claim 1 recites that the nodes themselves indicate satisfaction of a node-criteria packet matching function. The Appellants respectfully submit that no such teaching or suggestion exists in the cited passage of Riddle, or anywhere else in Riddle. Rather than child nodes indicating satisfaction of a node-criteria packet matching function, as recited in claim 1, Riddle merely teaches comparing against attributes stored in nodes of a tree. Riddle, col. 9, ln. 28-34.

Claim 1 also recites, in part, "repeating the step of passing and forming for a next tree level until no first child of said next level at a succeeding next level indicates satisfaction of the node-criteria packet matching function of said first child of said next level." The Office Action alleges that these claim limitations can be found at column 9, lines 28-62 of Riddle. FOA, pg. 3.

The Appellants respectfully submit that that nowhere in the cited text of Riddle is there a teaching or suggestion of repeatedly passing the data packet to a next tree level until there is no indication of match satisfaction by a child node of the next tree level, in accordance with claim 1. As mentioned above, such limitation are not contained or suggested in Riddle

since, for example, Riddle only mentions that the tree is traversed from top to bottom. Riddle, col. 11, ln. 29-31.

For at least these reasons, the Appellants respectfully assert that the Examiner has not established a *prima facie* case of anticipation for claim 1. The Appellants submit that the rejection of claim 1 is improper and respectfully request that the rejection of claim 1 be reversed by the honorable Board.

Claims 2-3, 12-16, 22-27, and 33-35

Claims 2-3, 12-16, 22-27, and 33-35 are dependent on and further limit claim 1. Since claim 1 is believed allowable over the cited art, claims 2-3, 12-16, 27, and 33-35 are also believed allowable over the cited art.

Claim 28

Claim 28 recites, in part, "a packet module to successively pass the packet from child node to child node at a next tree level until a first child node of the next tree level of the classification tree which indicates a satisfaction of a node-criteria of the first child node, and to form the data packet into a matched packet until no first child node of at a succeeding next level indicates satisfaction of the first node-criteria of the first child node of the succeeding next level." The Final Office Action alleges that these claim limitations can be found at column 9, lines 28-62 of Riddle. FOA, pg. 5.

As discussed above, Riddle merely teaches comparing against attributes stored in nodes of a tree. Riddle, col. 9, ln. 28-34. By contrast, claim 28 recites that the nodes themselves indicate satisfaction of a node-criteria packet matching function. The Appellants respectfully submit that nowhere in Riddle is there a teaching or suggestion of the above limitations of claim 28.

For at least this reason, the Appellants respectfully assert that the Examiner has not established a *prima facie* case of anticipation for claim 28. The Appellants submit that the

rejection of claim 28 is improper and respectfully request that the rejection of claim 28 be reversed by the honorable Board.

Claims 29-32

Claims 29-32 are dependent on and further limit claim 28. Since claim 28 is believed allowable over the cited art, claims 29-32 are also believed allowable over the cited art.

Claim 38

Claim 38 recites, in part, "means for successively passing the data packet to each child of a first tree level until a first child node of the first tree level of the classification tree indicates a satisfaction of a node-criteria of said first child node, and the first child node forming said data packet into a matched packet." The Office Action alleges that these claim limitations can be found at column 9, lines 28-62 of Riddle. FOA, pg. 5.

As discussed above, Riddle merely teaches comparing against attributes stored in nodes of a tree. Riddle, col. 9, ln. 28-34. By contrast, claim 38 recites that the nodes themselves indicate satisfaction of a node-criteria packet matching function. The Appellants respectfully submit that nowhere in Riddle is there a teaching or suggestion of the above limitations of claim 38. For at least this reason, claim 38 is believed not anticipated by Riddle and is thus allowable over the cited art.

For at least this reason, the Appellants respectfully assert that the Examiner has not established a *prima facie* case of anticipation for claim 28. The Appellants submit that the rejection of claim 28 is improper and respectfully request that the rejection of claim 28 be reversed by the honorable Board.

Conclusion

In view of the foregoing, Appellants submit that the rejections of claims 1-6, 12-16, 22-35 and 38 are improper and

respectfully requests that the rejections of claims 1-6, 12-16, 22-35 and 38 be reversed by the Board.

Respectfully submitted,

Dated: September 18, 2006

Ido Tuchman, Reg. No. 45,924
82-70 Beverly Road
Kew Gardens, NY 11415
Telephone (718) 544-1110
Facsimile (718) 544-8588

Claims Appendix

Claim 1. (previously presented) A method for classifying a data packet, the method comprising:

receiving the data packet at a root node of a classification tree;

successively passing the data packet to each child of a first tree level until a first child of the first tree level of the classification tree indicates a satisfaction of a node-criteria packet matching function of said first child, and the first child forming said data packet into a matched packet; and

repeating the step of passing and forming for a next tree level until no first child of said next level at a succeeding next level indicates satisfaction of the node-criteria packet matching function of said first child of said next level.

Claim 2. (original) A method as recited in claim 1, wherein the step of passing includes executing a set of code which returns a status indication.

Claim 3. (original) A method as recited in claim 1, wherein the step of forming includes the first child specifying a set of code to be run subsequently.

Claim 4. (original) A method as recited in claim 3, wherein the step of specifying includes specifying the set of code to be run following satisfaction.

Claim 5. (original) A method as recited in claim 1, further comprising dynamically adding at least one node in at least one level of the classification tree.

Claim 6. (original) A method as recited in claim 5, wherein said at least one new child node is a Real Audio node.

Claims 7-11 (canceled)

Claim 12. (original) A method as recited in claim 1, further comprising the step of parsing said matched packet and generating relevant information.

Claim 13. (original) A method as recited in claim 1, further comprising the step of transforming said matched packet into a transformed packet.

Claim 14. (original) A method as recited in claim 1, further comprising associating the packet with a last first child indicating satisfaction.

Claim 15. (original) A method as recited in claim 14, further comprising executing a set of code in accordance with said last first child.

Claim 16. (original) A method as recited in claim 1, further comprising determining a disposition of the data packet.

Claims 17-21 (canceled)

Claim 22. (original) A method as recited in claim 16, further comprising employing the classification process as a firewall.

Claim 23. (previously amended) A method as recited in claim 1, further comprising employing the classification process for dynamic application level classification.

Claim 24. (original) A method as recited in claim 23, further comprising employing the classification process for policy enforcement.

Claim 25. (original) A method as recited in claim 23, further comprising employing the classification process for rate limiting.

Claim 26. (original) A method as recited in claim 23, further comprising employing the classification process for load balancing.

Claim 27. (original) A method as recited in claim 1, further comprising employing the classification process to shape traffic.

Claim 28. (original) An apparatus to classify a data packet, the apparatus comprising:

a network interface device to receive the data packet from the physical network and pass the data packet to the root node of a classification tree, and the reverse, to receive the data packet from the root node and send the data packet to the physical network;

a packet module to successively pass the packet from child node to child node at a next tree level until a first child node of the next tree level of the classification tree which indicates a satisfaction of a node-criteria of the first child node, and to form the data packet into a matched packet until no first child node of at a succeeding next level indicates satisfaction of the first node-criteria of the first child node of the succeeding next level.

Claim 29. (original) An apparatus as recited in claim 28, wherein a portion of the apparatus is implemented as an accelerator chip.

Claim 30. (original) An apparatus as recited in claim 28, wherein the apparatus is employed for application level classification.

Claim 31. (original) An apparatus as recited in claim 28, wherein the apparatus is employed as a firewall.

Claim 32. (original) An apparatus as recited in claim 28, wherein the apparatus is employed as a border server.

Claim 33. (original) A method as recited in claim 2, wherein the status indication is of the pm_t type.

Claim 34. (original) An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing classification of a data packet, the computer readable program code means in said article of manufacture

comprising computer readable program code means for causing a computer to effect the steps of claim 1.

Claim 35. (original) An article of manufacture as recited in claim 34, the computer readable program code means in said article of manufacture further comprising computer readable program code means for causing a computer to effect dynamically adding at least one node in at least one level of the classification tree.

Claim 36. (canceled)

Claim 37. (canceled)

Claim 38. (original) An apparatus for classifying a data packet, the apparatus comprising:

means for receiving the data packet at a root node of a classification tree;

means for successively passing the data packet to each child of a first tree level until a first child node of the first tree level of the classification tree indicates a satisfaction of a node-criteria of said first child node, and the first child node forming said data packet into a matched packet; and

means for repeating the steps of passing and forming for a next tree level until no first child node of said next tree level at a succeeding next level indicates satisfaction of the node-criteria of said first child node of said succeeding next level.

Claim 39. (canceled)

Evidence Appendix

None.

Related Proceedings Appendix

None.